

PENT COOPERATION TREA

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION (PCT Rule 61.2)

| | |
|--|---|
| Date of mailing (day/month/year) 12 January 2001 (12.01.01) | To: Commissioner US Department of Commerce United States Patent and Trademark Office, PCT 2011 South Clark Place Room CP2/5C24 Arlington, VA 22202 ETATS-UNIS D'AMERIQUE in its capacity as elected Office |
| International application No. PCT/US00/11422 | Applicant's or agent's file reference 54779PCT9A |
| International filing date (day/month/year) 27 April 2000 (27.04.00) | Priority date (day/month/year) 07 June 1999 (07.06.99) |
| Applicant FUJII, Sana | |

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

16 November 2000 (16.11.00)

in a notice effecting later election filed with the International Bureau on:

2. The election was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|---|---|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer R. E. Stoffel Telephone No.: (41-22) 338.83.38 |
|---|---|

INTERNATIONAL SEARCH REPORT

Intel Application No
PCT/US 00/11422

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C09J4/06 C08F290/06 C09J4/00 C08F220/28 C08F220/30
 G11B7/24

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 C09J C08F G11B C09D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|--|-----------------------|
| X, P | WO 99 61542 A (DAINIPPON INK & CHEMICALS ;MURAKAMI KAZUO (JP)) 2 December 1999 (1999-12-02) see whole document, EP1000993 for English translation --- | 1,3,4 |
| X | GB 1 545 061 A (LOCTITE CORP) 2 May 1979 (1979-05-02) page 1, line 55 -page 2, line 39 page 3, line 75 - line 99 page 4, line 8 - line 49 examples claims 1-3,7,8,14,23-26 idem. --- | 1,3 |
| Y | --- | 2,4 |

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

10 August 2000

Date of mailing of the international search report

22/08/2000

Name and mailing address of the ISA

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Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.
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Authorized officer

Bettels, B

INTERNATIONAL SEARCH REPORT

Inte [REDACTED] Application No.
PCT/US 00/11422

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|--|-----------------------|
| Y | PATENT ABSTRACTS OF JAPAN vol. 1998, no. 08, 30 June 1998 (1998-06-30) & JP 10 060382 A (SLIONTEC KK), 3 March 1998 (1998-03-03) see also Chem.Abs. AN 1998:146996 CAPLUS: poly(tetramethylene glycol) based acrylic resin (UV-6100B) in example abstract ----- | 2 |
| Y | PATENT ABSTRACTS OF JAPAN vol. 1998, no. 10, 31 August 1998 (1998-08-31) & JP 10 120982 A (DAINIPPON INK), 12 May 1998 (1998-05-12) abstract see also Chem.Abs. AN 1998:287042 CAPLUS ----- | 4 |
| A | EP 0 913 444 A (CIBA GEIGY AG) 6 May 1999 (1999-05-06) see description ----- | 1,4 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/11422

| Patent document cited in search report | | Publication date | | Patent family member(s) | | Publication date |
|--|---|------------------|----|-------------------------|--|------------------|
| WO 9961542 | A | 02-12-1999 | EP | 1000993 A | | 17-05-2000 |
| GB 1545061 | A | 02-05-1979 | AU | 508482 B | | 20-03-1980 |
| | | | AU | 1182676 A | | 15-09-1977 |
| | | | BR | 7601482 A | | 14-09-1976 |
| | | | CA | 1091384 A | | 09-12-1980 |
| | | | CH | 637685 A | | 15-08-1983 |
| | | | DE | 2610423 A | | 16-09-1976 |
| | | | ES | 446032 A | | 01-06-1977 |
| | | | FR | 2303835 A | | 08-10-1976 |
| | | | IT | 1057983 B | | 30-03-1982 |
| | | | JP | 51114436 A | | 08-10-1976 |
| | | | JP | 61000365 B | | 08-01-1986 |
| | | | NL | 7602600 A | | 14-09-1976 |
| | | | US | 4309526 A | | 05-01-1982 |
| JP 10060382 | A | 03-03-1998 | | NONE | | |
| JP 10120982 | A | 12-05-1998 | | NONE | | |
| EP 0913444 | A | 06-05-1999 | JP | 11256120 A | | 21-09-1999 |
| | | | US | 6086795 A | | 11-07-2000 |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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|--|--|---|
| Applicant's or agent's file reference 54779PCT9A | FOB FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No. PCT/US00/11422 | International filing date (day/month/year) 27/04/2000 | Priority date (day/month/year) 07/06/1999 |
| International Patent Classification (IPC) or national classification and IPC C09J4/06 | | |
| Applicant 3M INNOVATIVE PROPERTIES COMPANY | | |
| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 2 sheets.</p> | | |
| <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input checked="" type="checkbox"/> Certain documents cited VII <input checked="" type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application | | |

| | |
|---|---|
| Date of submission of the demand 16/11/2000 | Date of completion of this report 03.10.2001 |
| Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 | Authorized officer Bettels, B Telephone No. +31 70 340 4262 |



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/11422

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-16 as originally filed

Claims, No.:

1-6 with telefax of 16/07/2001

Drawings, sheets:

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/11422

the drawings, sheets:

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)
see separate sheet

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|------|------------|
| Novelty (N) | Yes: | Claims 2,4 |
| | No: | Claims 1,3 |
| Inventive step (IS) | Yes: | Claims -/- |
| | No: | Claims 1-4 |
| Industrial applicability (IA) | Yes: | Claims 1-4 |
| | No: | Claims -/- |

2. Citations and explanations **see separate sheet**

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US00/11422

Re Item I

Basis of the opinion

1.

The International Preliminary Examination Report is based on the claims as originally filed and published with the present application.

This is because the modified claims (as of 16 Jul 01) contain subject matter which extends beyond the application as filed, contrary the Rule 70.2(c) PCT.

The passage "...comprising the reaction product of poly(tetramethylene glycol), diisocyanate, and linear or branched acrylic ester..." is an unallowable generalisation of the terms used in the application as originally filed. Concerning component (1) the latter merely supports (p. 6, I. 11-13, I. 26-30) tetramethylxylene diisocyanate and hydroxyethyl acrylate. This objection applies to all modified claims (i.e. 1,2,5, and 6).

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

2.

Reference is made to the following documents:

D1: GB1545061 D2: JP10120982

(for Japanese citations see also abstracts cited in the search report)

3.

The subject-matter of claims 1, 3 is not new in the sense of article 33(2) PCT.

D1 discloses a radiation curable adhesive containing the reaction product of a polyether derivative, such as poly(tetramethylene)ether (claim 3, p.3, I.47), with a diisocyanate. The product of this reaction is further reacted to introduce terminal (meth)acrylic functionality (see also passages cited in the search report). To this compound (1) may be added (2) hydroxyalkyl acrylate diluents - such as hydroxyethyl acrylate or hydroxypropyl acrylate - in a proportion of less than 60 wt.-% (p.4, I.95-110), and photoinitiator (3). Such compositions fall under the present claims 1 and 3 which are, therefore, not novel.

4.

The subject-matter of claims 2, 4 is not inventive in the sense of article 33(3) PCT.

D2 which is considered to represent the closest prior art teaches compositions containing a

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US00/11422

urethane acrylate based on poly(tetramethylene glycol), toluene diisocyanate and hydroxyethyl acrylate which are used for bonding digital video disks. According to D2, these compositions also show improved durability on exposure to both elevated temperatures and a high degree of humidity. D2 compositions differ from the present ones only in their lower proportion of urethane acrylate.

Therefore, in view of D2, the objective problem may be defined as providing an alternative adhesive composition - useful for direct bonding of optical disk substrates - with improved durability, the solution being the present radiation curable adhesive compositions.

Starting from D2, it would appear obvious for the skilled man - since common practice - to vary the proportions of urethane acrylate in the composition in order to optimise its properties in view of a specific application or use, such as using the adhesive for producing DVDs with improved durability. Therefore, the subject-matter of claim 4 cannot be considered inventive. As to the choice of urethane acrylate defined in claim 2, this subject-matter cannot be considered inventive in the absence of appropriate comparative data vis-à-vis D2.

Re Item VI

Certain documents cited

5.

Although WO-A-9961542 (publication date: 19991202; application date: 19990526; priority date: 19980528), the first citation of the international search report, does not constitute prior art within the meaning of Rule 64.1 (b) PCT, it appears to be particularly relevant.

No check has been made as to whether the priority of the present application has been validly claimed.

Re Item VII

Certain defects in the international application

6.

In accordance with the requirements of Rule 5.1 a) ii) PCT D1-D2 should be indicated in the description and the relevant technical details should be discussed.

What is claimed is:

1. An adhesive composition comprising (1) a urethane acrylate having a poly(tetramethylene glycol) skeleton and comprising the reaction product of poly(tetramethylene glycol), diisocyanate, and linear or branched acrylic ester, (2) an acrylic ester having a hydroxyl group in its molecule, and (3) a photoinitiator, characterized in that the composition comprises 40% by weight or more of the urethane acrylate (1) based on the sum of weights of the urethane acrylate (1) and the acrylic ester (2).
10
2. The adhesive composition of claim 1, wherein the urethane acrylate (1) is an oligomer comprising the reaction product of poly (tetramethylene glycol), tetramethylxylene diisocyanate, linear or branched acrylic ester, and ethylene glycol.
- 15 3. The adhesive composition of claim 1 or 2, wherein the acrylic ester (2) is one or more of hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxybutyl acrylate, and hydroxyphenoxypropyl acrylate.
- 20 4. An optical disc comprising disc substrate bonded by an adhesive and at least one reflecting metallic film, characterized in that the adhesive is obtained by cure of the adhesive composition of any one of claims 1 to 3.
- 25 5. A method of making a urethane adhesive having a poly(tetramethylene glycol) skeleton moiety comprising the step of:
reacting a urethane acrylate comprising the reaction product of poly(tetramethylene glycol), diisocyanate, and linear or branched acrylic ester with (2) an acrylic ester having a hydroxyl group in its molecule, and (3) a photoinitiator, wherein the composition comprises 40% by weight or more of the urethane acrylate (1) based on the sum of weights of the urethane acrylate (1) and the acrylic ester (2).
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6. The adhesive composition of claim 1 or claim 2 wherein the ratio of poly(tetramethylene glycol), diisocyanate, and linear or branched acrylic ester is about 62:15:14 parts by weight respectively.

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- 17a -

WORLD TRADE ORGANIZATION
PENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|--|---|---|
| Applicant's or agent's file reference 54779PCT9A | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/US 00/ 11422 | International filing date (day/month/year) 27/04/2000 | (Earliest) Priority Date (day/month/year) 07/06/1999 |
| Applicant 3M INNOVATIVE PROPERTIES COMPANY | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
 - a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
 - b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
 - contained in the international application in written form.
 - filed together with the international application in computer readable form.
 - furnished subsequently to this Authority in written form.
 - furnished subsequently to this Authority in computer readable form.
 - the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished
2. **Certain claims were found unsearchable (See Box I).**
3. **Unity of Invention is lacking (see Box II).**
4. With regard to the **title**,
 - the text is approved as submitted by the applicant.
 - the text has been established by this Authority to read as follows:
5. With regard to the **abstract**,
 - the text is approved as submitted by the applicant.
 - the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the **drawings** to be published with the abstract is Figure No.
 - 1,2 as suggested by the applicant.
 - because the applicant failed to suggest a figure.
 - because this figure better characterizes the invention.

1,2
None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 00/11422

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C09J4/06 C08F290/06 C09J4/00 C08F220/28 C08F220/30
G11B7/24

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

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| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|--|-----------------------|
| X, P | WO 99 61542 A (DAINIPPON INK & CHEMICALS ; MURAKAMI KAZUO (JP)) 2 December 1999 (1999-12-02) see whole document, EP1000993 for English translation --- | 1, 3, 4 |
| X | GB 1 545 061 A (LOCTITE CORP) 2 May 1979 (1979-05-02) page 1, line 55 -page 2, line 39 page 3, line 75 - line 99 page 4, line 8 - line 49 examples claims 1-3, 7, 8, 14, 23-26 idem. --- | 1, 3 |
| Y | --- | 2, 4 -/- |

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
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- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

10 August 2000

22/08/2000

Name and mailing address of the ISA
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Authorized officer

Bettels, B

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 00/11422

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|--|-----------------------|
| Y | PATENT ABSTRACTS OF JAPAN vol. 1998, no. 08, 30 June 1998 (1998-06-30) & JP 10 060382 A (SLIONTEC KK), 3 March 1998 (1998-03-03) see also Chem.Abs. AN 1998:146996 CAPLUS: poly(tetramethylene glycol) based acrylic resin (UV-6100B) in example abstract --- | 2 |
| Y | PATENT ABSTRACTS OF JAPAN vol. 1998, no. 10, 31 August 1998 (1998-08-31) & JP 10 120982 A (DAINIPPON INK), 12 May 1998 (1998-05-12) abstract see also Chem.Abs. AN 1998:287042 CAPLUS --- | 4 |
| A | EP 0 913 444 A (CIBA GEIGY AG) 6 May 1999 (1999-05-06) see description ----- | 1,4 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/11422

| Patent document cited in search report | | Publication date | Patent family member(s) | | Publication date |
|--|---|------------------|-------------------------|------------|------------------|
| WO 9961542 | A | 02-12-1999 | EP | 1000993 A | 17-05-2000 |
| GB 1545061 | A | 02-05-1979 | AU | 508482 B | 20-03-1980 |
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| | | | CA | 1091384 A | 09-12-1980 |
| | | | CH | 637685 A | 15-08-1983 |
| | | | DE | 2610423 A | 16-09-1976 |
| | | | ES | 446032 A | 01-06-1977 |
| | | | FR | 2303835 A | 08-10-1976 |
| | | | IT | 1057983 B | 30-03-1982 |
| | | | JP | 51114436 A | 08-10-1976 |
| | | | JP | 61000365 B | 08-01-1986 |
| | | | NL | 7602600 A | 14-09-1976 |
| | | | US | 4309526 A | 05-01-1982 |
| JP 10060382 | A | 03-03-1998 | NONE | | |
| JP 10120982 | A | 12-05-1998 | NONE | | |
| EP 0913444 | A | 06-05-1999 | JP | 11256120 A | 21-09-1999 |
| | | | US | 6086795 A | 11-07-2000 |